Tools for Teaching and Learning - 2003

North Dakota

Educational Technology Plan

May 2003

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- **Purpose of the North Dakota Educational Technology Plan**
  The purpose of this plan is to identify the goals, objectives, strategies, timelines and measures of success that state agencies, institutions and programs will use in supporting the use of technology to improve elementary and secondary student learning. The plan also provides guidance to North Dakota educators, school leaders and other stakeholders as they plan to integrate technology into the curricula in local districts.

  The 2003 plan is developed to be consistent with the ND Educational Technology Council's mission of "coordinating the use and development of technology systems to enhance educational opportunities for elementary and secondary education," the ND Department of Public Instruction's mission of "providing a comprehensive system of educational opportunities for all," and the ND Information Technology Department's goal of "maximizing our technology investments through the adoption of a shared vision and spirit."

  The 2003 plan is also correlated with the "North Dakota Guide for Effective Use of Technology," which is the basis for the 2001 state plan. In addition, the 2003 plan is developed to be consistent with the 2003 North Dakota Library/Technology Literacy Standards and the federal *No Child Left Behind* Act of 2001.

- **Process for Developing this Plan**
  The current statewide educational technology planning process began in August 2002 with an initial meeting of a group of 16 North Dakota K12 stakeholders, representing teachers, technology coordinators, administrators, parents and state educational technology staff. A subcommittee of six representatives of that group has served as the plan writing team.

  A draft version was made available for public comment from February 3 through March 14, 2003. Comments were sought through an online response form, in writing, via email, through discussions as part of small group presentations and through two statewide public meetings held on the state video network on February 14 and 18, 2003. Input from the public comment process was used to develop a final draft of the plan, which was approved by the writing subcommittee, by the larger stakeholder group, and adopted by the North Dakota Educational Technology Council in May 2003.

- **Related Resources**
  In addition to the state technology plan document, other related technology planning resources will be developed and made available for use by schools:
  - North Dakota Guide for Effective Technology Use,
  - Template for School Technology Planning,
  - Approval Process for School Technology Plans.

- **Vision for Educational Technology in North Dakota**
  Educational Technology is a basic resource for helping all students grow and acquire the academic and social skills that lead to success. Educators who use technology as a tool to support strategies such as problem-based, inquiry-based, and project-based learning, create environments in which students are more engaged in their learning and who work in a more self-directed manner. Technology applications such as distance learning and student information systems help schools provide needed coursework, track student progress and improve classroom practice.

- **Goal for Educational Technology in North Dakota**
  The single goal of the North Dakota Educational Technology Plan is to improve student achievement through the use of educational technology in K-12 schools.

- **Toward achieving this goal, the North Dakota Educational Technology Plan has four objectives.**
  1. A shared vision of how technology is to be used in North Dakota schools will be developed and used to drive all technology planning and implementation activities.
  2. Educators will provide all students with technology enriched learning opportunities that lead to academic success.
  3. All educators will be proficient in the use and integration of technology.
  4. All schools will provide access to appropriate and effective technology resources for all educators and all students.

Goal: To improve student achievement through the use of educational technology in North Dakota K-12 schools.

Objective #1. A clear vision of how technology is to be used in North Dakota schools will be developed and used to drive all technology planning and implementation activities.

Description/Background/Rationale. The vision of technology use in schools is the destination, identifying "where we want to go" with technology. Without a clearly defined vision that is known and understood by all stakeholders, everyone will struggle. Although some progress may be made toward integrating technology into the curriculum, without a common understanding by all stakeholders, it will not have the structure or support necessary to sustain learning environments in which technology is integral to student achievement.

The National Educational Technology Standards for Students (NETS-S) developed by the International Society for Technology in Education (ISTE), identifies "vision with support and proactive leadership from the education system" as an essential condition to realizing powerful uses of technology. ITSE's NET Standards for Teachers confirms, "Shared vision means that the commitment to technology is systemic." Further, ISTE's Technology Standards for School Administrators (TSSA) includes as the first standard, "Educational leaders facilitate the shared development by all stakeholders of a vision for technology use and widely communicate that vision."

A pioneering spirit is necessary to take a strong vision and put it into practice in the classroom. District and building administrators play a key role in communicating the vision to stakeholders and setting expectations for translating that vision into practice. It is not acceptable to continue having students learn in the same way and consider that "a vision." Technology needs to be used to teach students new ways to learn.

To make the vision become a part of the community, it is necessary to include stakeholders who will assist in the development and the support of the vision. Including parents, students and other stakeholders in a process of collaborative, informed planning will foster enthusiasm and urgency for the implementation of the vision.

2002 Status. The current vision for educational technology is identified in the preface of the 2001 state technology plan. Although that vision has served to provide focus to state and local educational technology efforts, the intent of revising the vision statement in the 2003 plan is to provide state and local leaders with a more succinct and clear picture of where we are going and why educational technology is important.

All North Dakota schools have a technology plan that contains a local vision. Results from school technology audits facilitated by EduTech in 2002 indicate that nearly all teaching staff are aware of district work and planning to create a vision for the use of technology in their schools, with the majority of teachers stating that they were not involved in creating that vision. Responses obtained from teachers during assessment interviews were nearly unanimous: teachers expressed the desire for clearer expectations on how to implement (transfer) the district vision into classroom practice.

Goal: To improve student achievement through the use of educational technology in North Dakota K-12 schools.		
Objective #1. A shared vision of how technology is to be used in North Dakota schools – focused on student learning – will be developed and used to drive all technology planning and implementation activities.		
Strategy	Measure	Timeline
1.1 The state will have a clear vision for educational technology developed with input from education leaders, educators, parents and community stakeholders.	The state educational technology plan includes a shared vision statement.	May 2003
1.2 The ND Educational Technology Council will communicate the state's vision for educational technology to stakeholders.	The state educational technology plan is published and distributed to appropriate groups: ND DPI, ND SBCTE, NDEA, NDCEL, NDATL, other administrator groups, parent/public/legislative groups.	May 2003
1.3 North Dakota schools will use a broad-based stakeholder group, including parents to develop a clear vision for educational technology as part of their annual technology planning process.	School educational technology plans submitted to state agencies for approval include an educational technology vision statement that is communicated to local stakeholder groups.	Nov 2003 and ongoing

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Objective #2. Educators will provide all students with technology enriched learning opportunities that lead to academic success.

Description/Background/Rationale. Technology in schools has the potential to enhance and transform teaching practices and student learning. It provides opportunities for educators to break through isolation and serves as a catalyst for significant changes in learning practices. Educators should be skilled in the use of a variety of models of curriculum design and learning strategies that are supported by technology.

The effective use of technology enables educators to implement new teaching techniques designed to increase student learning through engaging authentic activities. The use of such tools as curriculum mapping applications and computer assisted assessments help educators plan teaching strategies to better meet individual student needs. Teachers who use technology as a tool to support strategies such as problem-based, inquiry-based and project-based learning create environments in which students work in more self-directed, collaborative teams and develop higher-order thinking skills. Technology creates increased opportunities for students to work on authentic tasks and challenging problems, often connecting with peers, community members or experts in the field.

What do students need to learn, and how can technology promote those learning goals? Educators need to determine if the specific purpose of the technology use addresses the school's goals for student learning. A clear set of goals, expectations and criteria for student learning should be based on national and state standards and be part of the schools improvement plan. Only then can technology plans be made for purchasing equipment and materials, and for assessing how well the technology helps achieve identified student-learning goals.

Assessment, including online student testing tools and electronic portfolios, should be a seamless part of the learning process and focus on measuring student performance in authentic ways. Federal and state agencies, local school boards and the general public, require schools to be accountable for their results. A systematic process should be in place for continuous assessment, evaluation and reporting the extent to which students are progressing and whether educational objectives are being met. Assessment tools should be varied and provide adequate baseline data that will support accountability. Conclusions regarding instructional results should be communicated and used to support data-driven decisions.

2002 Status. ND TWT Phase II provided an in-depth experience for teachers who wanted to integrate technology into their curriculum using a problem, project, or inquiry-based approached. Over 45% of TWT Phase I teachers participated. PCC results indicate that 12% of Phase II teachers reported a score in the transformational range in the "curriculum, learning and assessment" competency areas, an 8% increase from the TWT Phase I reports.

The ND Library Technology Literacy Content Standards, completed in 2003, provide the basis for development of an assessment process that can be used to determine the level of technology literacy in ND students by 2004.

The 2002 North Dakota State Assessment, the statewide high-stakes test, are for the first time aligned with the North Dakota reading/language arts and math standards. The school report cards generated from the results will allow schools to target specific teaching/learning areas that need most attention and plan their technology implementation activities toward improved student achievement in a meaningful and measurable way.

Communicating school and student results to parents and the larger community can lead to stronger support for all school efforts to improve student achievement. School websites and communication tools within student information systems can be used effectively to communicate with parents and other stakeholders.

Goal: To improve student achievement through the use of educational technology in North Dakota K-12 schools.		
Objective #2. Educators will provide all students with technology enriched learning opportunities that lead to academic success.		
Strategy	Measure	Timeline
2.1 All educators will implement standards-based learning opportunities that use technology enhanced instructional strategies to support the learning needs of students as identified by schools in local improvement plans.	A sample of school improvement plans indicates that schools are using technology resources to address targeted goals.	Spring 2004 and annually
2.2 Students will use technology in authentic, project-based learning activities involving teamwork, collaboration and communication.	Schools' annual reports show increases toward a goal of achieving technology enriched learning environments by 2007.	Spring 2004 and annually
2.3 The ND ETC will work with ND DPI and other groups to develop the definition of "8th Grade Technology Literacy," along with rubrics and other tools to assist schools in assessing and reporting student technology literacy.	8th Grade Technology Literacy is defined and assessment tools are available to schools to report the percentage of 8th grade students who are proficient.	January 2007 and annually
2.4 All students will be technology literate by the end of eighth grade, as defined by the ND Library/Technology Literacy Standards.	The percentage of students who rate at a proficient level of the 8th grade technology literacy skills will increase annually toward a goal of 100% by January 2012.	Spring 2008 and annually
2.5 Schools will use distance learning and other technologies to ensure that students graduate ready for work or post-secondary education.	School reports of distance education activities and results of the North Dakota Assessment, given annually to 4th, 8th and 12th grade students.	Spring 2004 and annually

Goal: To improve student achievement through the use of educational technology in North Dakota K-12 schools.		
Objective #2. Educators will provide all students with technology enriched learning opportunities that lead to academic success.		
Strategy	Measure	Timeline
2.6 Student academic achievement will increase as a result of technology enriched teaching/learning environments.	Schools report increases in student achievement results on the North Dakota Assessment, given annually to 4th, 8th and 12th grade students.	Spring 2004 and annually
2.7 Schools will communicate student achievement results to parents and other community stakeholders.	School reports of communication activities in submitted technology plans.	Spring 2004 and annually

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Objective #3. **All educators will be proficient in the use and integration of technology.**

Description/Background/Rationale. Administrators at the building and district level greatly influence changes in the culture of a school. Because of this, they should model the effective use of technology in support of learning and administrative functions and be expected to maintain a solid knowledge of the applications of technology to student learning. Administrators should initiate and support professional development processes that reflect attention to principles of adult learning.

A comprehensive professional development process will help ensure that technology is used effectively to create new opportunities for learning and to promote student achievement. Through professional development, educators should become proficient at aligning technology use with student learning goals/standards, and integrating technology into the curriculum, so that technology is used as a tool for learning projects that engage students.

The most important factor for student achievement is teacher quality. Teachers must possess skills that allow them to be innovators in a technology-rich environment. If educators are not effective users of technology, they will not recognize how technology can be used in the classroom. Educators must be prepared to support students in achieving high academic performance through the effective use of technology.

2002 Status. The Technology Academy for School Leaders (TASL), a the three-year project supported by state funds appropriated to EduTech and a grant from the Bill and Melinda Gates Foundation, provides administrators with workshops including topics such as ND STAGEnet - access, tools, and services; technology for productivity and professional practice; technology leadership, and assessing technology progress and evaluating results. Over 600 administrators will complete the academy.

The ND Teaching with Technology Initiative (TWT), a five-year professional development project funded through a federal Innovation Challenge Grant, offered technology integration professional development for 90% of the state's teachers and administrators in its first four years. Data from the project's skill reporting instrument, the Professional Competency Continuum, indicated that 84% of the participating administrators reported a score in the mid-high adaptation range in the "administrative competencies;" 53% of participating teachers reported mid-high adaptation range scores in the "core technology skills" competency area, 54% reported a mid-high adaptation score in the "professional practice" area, and 53% reported a mid-high adaptation score in the "classroom and instructional management" area.

Professional development opportunities are offered to teachers on an ongoing basis by EduTech regional and statewide staff. Topics include both basic technology skills and advanced curriculum integration sessions based on authentic classroom activities.

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Objective #3. All educators will be proficient in the use and integration of technology.		
Strategy	Measure	Timeline
3.1 The ND ETC will work with ND DPI, ND ESPB, teacher and administrator groups, and others to develop the definition of the NCLB requirement, “technology fully integrated into the curriculum,” and the criteria to be used in assessing technology integration in all schools.	Criteria are established and available to schools (by spring 2004) to use in reporting progress toward full integration of technology into the curriculum by January 2007.	Spring 2004 and ongoing
3.2 The ND ETC will work with ND DPI, ND ESPB, teacher and administrator groups, and others to develop the definition of the NCLB requirement, “teachers will be proficient in technology integration knowledge and skills,” and the criteria to be used in assessing teacher technology integration proficiency.	Criteria are established and available to schools (by spring 2004) to use in reporting progress toward full integration of technology into the curriculum by January 2007.	Spring 2004 and ongoing
3.3 The state will track school reports of technology integration and report the results for use by federal, state and local stakeholders.	Data from school technology plans is collected by ND ETC and DPI.	Spring 2004 and annually
3.4 The ND ETC will collaborate with the state’s pre-service education institutions to ensure new teachers are prepared to use technology in the classroom.	Report by the ND ETC every two years regarding the accreditation status of the teacher preparation programs.	2005, 2007, and ongoing

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Objective #3. All educators will be proficient in the use and integration of technology.		
Strategy	Measure	Timeline
3.5 All school districts will use data to design professional development goals and strategies and adequately fund those efforts. (Potential data sources: student achievement scores, needs assessments, TAGLIT, TWT PCC, HPRTEC Technology Proficiency Profiler, SIP/NCA surveys and other existing school professional development plans).	Professional development goals and strategies are included in district technology plans. School funding for professional development annually increases toward a goal of 25% of total technology budget.	Spring 2004 and annually
3.6 Professional development plans will be based on standards (curriculum standards, national educational technology standards for teachers and school administrators, ND Library Technology Literacy).	School professional development plans are aligned with standards.	Spring 2004 and annually
3.7 School districts will ensure that all educators, including administrators, are proficient in basic technology tools and model appropriate use. (Same potential data sources as in 3.5)	Schools report the number of educators who are proficient increases annually toward at goal of 100% by January 2007.	Spring 2004 and annually
3.8 School districts will ensure that all educators are proficient in technology integration knowledge and skills appropriate to subject area and grade level.	Schools report the number of educators who are proficient increases annually toward at goal of 100% by January 2007.	Spring 2004 and annually

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Objective #4. All schools will provide access to appropriate and effective technology resources for all educators and all students.

Description/Background/Rationale. Technology access refers to the infrastructure necessary to provide and maintain effective and efficient technology deployment and connectivity on an equitable basis. As access to educational resources increases through the use of technology, it is critical that all students in North Dakota have an equal opportunity to participate in technology-enhanced learning. Otherwise, the state risks failure to serve the learners at greatest risk: those with special needs, the very young, older adults, those with limited English proficiency, those scoring poorly on standardized tests, those from low socioeconomic backgrounds, those for whom a historic technology bias exists, and those living in remote areas that lack access to a broad range of curriculum choices and informational resources.

The types of technology tools available and the performance capabilities of those tools should be at a level that will support and sustain current learning practices and will also encourage new and innovative learning practices. The range of technology tools must go beyond desktop computers with Internet connectivity, and include hardware and software that is appropriate and specific to individual curriculum areas such as math, science, the performing arts, and technical education, as well as include video and other distance learning technologies. Local schools and districts should have an annual plan for updating, refurbishing, and replacing hardware and software resources.

Connectivity addresses access to information and communication resources within the school building, the district, the community and the world. Outdated buildings, obsolete hardware and software and the lack of well planned and managed networks make the issue of connectivity difficult and create inequities for students.

Adequate and consistent funding is essential to successful integration of technology in schools. Schools should provide funding mechanisms for on-going costs of training of teachers, employing and training technical support staff and equipment replacement. Schools should provide adequate ratios of support personnel based on the size and complexity of the environment to ensure adequate response time and customized support to meet the instructional and equipment maintenance needs of each building.

2002 Status. As a result of state legislative action funding K-12 STAGEnet in 2001, all high school buildings in the state were connected to the state network and the Internet with a minimum ATM T1. General funds and E-Rate reimbursement pay for this basic connectivity at no cost to public schools. Some private schools are connected also, but they pay for the portion of the cost not reimbursed by E-Rate.

ND ITD and EduTech support K-12 STAGEnet by maintaining the stability of the network, providing training and implementing statewide applications such as virus protection and Internet filtering for CIPA compliance.

Over 60 school districts will implement PowerSchool Student Information System by September 2004, with most other districts using some other electronic student information system. The ND Department of Public Instruction will implement TetraData, a school data warehousing system, by mid-2004, enabling schools to disaggregate and analyze student data in order to more accurately access the results of instructional practices.

Ninety-seven percent of ND school districts have Internet access in instructional areas. Student to computer ratios average 2.8, with 4.9 students per Internet connected computer.

Federal and state grants, as well as local school district funding have been instrumental in schools' increasing the availability to high quality technology resources for educators and students. The number of public school sites with video networking capabilities being used to share high school courses increased from 63 in 2001 to 161 in 2002. In the fall of 2002 over 2,300 North Dakota students were attending a high school class via video networking every school day.

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Objective #4. All schools will provide access to appropriate and effective technology resources for all educators and students.		
Strategy	Measure	Timeline
4.1 The state will continue to ensure that all high schools have basic connectivity through North Dakota STAGEnet	ND ITD data indicate that all high schools have basic connectivity.	2003 and annually
4.2 The state will provide the support needed to make K-12 STAGEnet a stable and reliable tool for schools to use in teaching and learning as well as for administration of schools.	State support for EduTech, ITD support personnel, IVN and other agencies is maintained.	2003 and annually
4.3 The state will make financial and other resources available to support the implementation of educational technology, including distance-learning systems.	ND ETC maintains a level of funding to schools through state supported grants.	2003-05 and biennially
4.4 The state will secure other sources of funding to support implementation of school technology (federal title programs, vocational programs, E-rate, other public and private sources).	Federal funds available to state are secured and awarded successfully to schools.	2003 and ongoing
4.5 All school districts will connect all instructional areas with multiple LAN/WAN connections.	Data from school annual reports indicate instructional areas are being connected toward a goal of 100%.	Spring 2004 and ongoing
4.6 All school districts will develop and implement strategies to achieve a 3.5 to 1 student to computer ratio (multimedia with WAN connection).	Data from school annual reports indicate a 3.5 to 1 computer to student ratio.	Spring 2004 and ongoing
4.7 All school districts will develop and implement strategies to achieve a 2 to 1 student to computer ratio in instructional areas serving high numbers of high needs students.	Data from school annual reports indicate a 2 to 1 computer to student ratio in high needs area.	Spring 2004 and ongoing

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Objective #4. All schools will provide access to appropriate and effective technology resources for all educators and students.		
Strategy	Measure	Timeline
4.8 All school districts will provide adequate technical support for educational technology hardware and software, including administrative applications such as student data systems.	Schools report an increase annually toward a goal of one full time equivalent technical support person for each 300 workstations.	Spring 2004 and annually
4.9 All schools will comply with copyright and software licensing requirements.	Schools maintain adequate records related to compliance.	Spring 2004 and annually